

Please cancel claims 1-21 of application 09/809,686 and add new claims below (renumbered).

### CLAIMS

I claim:

1. A method of simultaneously initializing a first and second antiferromagnetic layer in a magnetic sensor, the sensor including an AP pinned substructure having a first ferromagnetic layer with the first antiferromagnetic layer exchange coupled to said first ferromagnetic layer, the sensor also including the second antiferromagnetic layer supporting magnetic bias stabilization of a free layer, comprising:

placing the sensor in an external magnetic field;

adjusting the magnitude of said magnetic field to an optimum value to cause the magnetization of said first ferromagnetic layer in said AP pinned substructure to be substantially perpendicular to the external magnetic field direction;

heating the sensor above the blocking temperature of both said first and second antiferromagnetic layers; and,

cooling the sensor below the blocking temperature of both the first and second antiferromagnetic layers in the presence of said external magnetic field.

2. A method of simultaneously initializing a first and second antiferromagnetic layer in a magnetic sensor which includes the first antiferromagnetic layer exchanged coupled to a pinned layer and the second antiferromagnetic layer exchanged coupled to a ferromagnetic layer, said ferromagnetic layer comprising a portion of an AP pinned substructure supporting magnetic bias stabilization of a free layer, comprising:

placing the sensor in an external magnetic field;

adjusting the magnitude of said external magnetic field to an optimum value to cause the magnetization of said ferromagnetic layer in said antiparallel pinned substructure to be substantially perpendicular to the external magnetic field direction;

heating the sensor above the blocking temperature of both said first and second antiferromagnetic layers; and,

cooling the sensor below the blocking temperature of both the first and second antiferromagnetic layers in the presence of said external magnetic field.

3. A method of simultaneously initializing a first and second antiferromagnetic layer in a magnetic sensor, the sensor including an AP pinned substructure having a first ferromagnetic layer with the first antiferromagnetic layer exchange coupled to said first ferromagnetic layer, the sensor also including the

second antiferromagnetic layer supporting magnetic bias stabilization of a free layer, comprising:

placing the sensor in an external magnetic field;

adjusting the magnitude of said magnetic field to approximately 2200 Oe;

heating the sensor above the blocking temperature of both said first and second antiferromagnetic layers; and,

cooling the sensor below the blocking temperature of both the first and second antiferromagnetic layers in the presence of said external magnetic field.

4. A method of simultaneously initializing a first and second antiferromagnetic layer in a magnetic sensor which has the first antiferromagnetic layer exchanged coupled to a pinned layer and the second antiferromagnetic layer exchanged coupled to a ferromagnetic layer, said ferromagnetic layer comprising a portion of an AP pinned substructure supporting magnetic bias stabilization of a free layer, comprising:

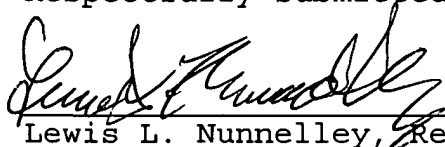
placing the sensor in an external magnetic field;

adjusting the magnitude of said external magnetic field to approximately 2200 Oe;

heating the sensor above the blocking temperature of both said first and second antiferromagnetic layers; and,

cooling the sensor below the blocking temperature of both the first and second antiferromagnetic layers in the presence of said external magnetic field.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Lewis L. Nunnelley", written over a horizontal line.

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